

PATENT ABSTRACTS OF JAPAN

(11) Publication number: **03040765 A**

(43) Date of publication of application: **21.02.91**

(51) Int. Cl **H02N 2/00**

(21) Application number: **01173133**

(22) Date of filing: **06.07.89**

(71) Applicant: **TOKIN CORP SHIMIZU HIROSHI**

(72) Inventor: **SHIMIZU HIROSHI  
YOSHIDA TETSUO**

(54) **ULTRASONIC MOTOR**

(57) Abstract:

**PURPOSE:** To reduce the variability of characteristics by a method wherein a longitudinal oscillator is provided with a plurality of circumferential electrodes orthogonal to the central axis and both sides of a piezo-electric torsional oscillator are polarized while expansion oscillation is excited on both ends of the hollow column of piezo-electric ceramics.

**CONSTITUTION:** A shaft 7 is penetrated through the hollow part of a piezo-electric composite longitudinal-torsional oscillator 28 and is fixed at the node of resonance in the oscillator 28 while rotors 9, 9', supported rotatably by bearings 8, 8' at both ends of the shaft 7 through springs 10, 10', is welded by pressure to the end surface of the piezo-electric longitudinal-torsional oscillator 28 through nuts 11, 11'. The piezo-electric longitudinal-torsional oscillator 28 is fixed by an annular supporting frame 30 at a central part which becomes the node of resonance.

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